

## ABSTRACT OF THE DISCLOSURE

[159] A large multimaster I<sup>2</sup>C bus system is partitioned into smaller bus segments. The bus segments are connected by bridges that isolate the segments and direct selected transactions and commands between the segments. By programming address bitmaps that are internal to each bridge, transactions can pass through the bridges so that the various bus segments appear to be one logical bus. Because each bridge implements address filtering so that transactions are selectively forwarded from one side of the bridge to the other based on the contents of an internal address bitmap, I<sup>2</sup>C slave addresses can be arbitrarily populated on either side of the bridge. Duplicate I<sup>2</sup>C slave addresses can be also used on different segments of a single logical I<sup>2</sup>C bus system. Masters on one segment can reach devices connected to the same bus segment and can also reach devices with duplicate addresses on other bus segments by using a tunnel command addressed to a bridge.